

Collaborative programme promotes proactive use of global safety information

An international coalition formed in the mid-1990s, GAIN aims to improve the collection and dissemination of vital safety information worldwide through the development of enhanced programme tools and processes.

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AN international coalition of aviation companies and organizations is striving to create a worldwide safety information infrastructure and enhanced tools and processes for collecting and analysing the data used in safety management.

The Global Aviation Information Network (GAIN), as the coalition is known, is dedicated to promoting and facilitating the voluntary collection and sharing of safety information. The concept was first proposed in 1996 by the U.S. Federal Aviation Administration (FAA) as a way to improve safety through more proactive use of incident and accident data. Participants include airlines, manufacturers, employee groups, governments and other aviation organizations.

The need for more effective safety initiatives is reflected in the fatal accident trend for worldwide commercial jet transports: this rate has been relatively constant for the last 15-20 years and is not likely to improve further without a breakthrough in safety management. Fortunately, the ability to use information proactively to improve safety has been enhanced by technological advances that facilitate the efficient collection, analysis and sharing of large volumes of safety information.

Airlines, manufacturers and governments around the world already have programmes that use information proactively to improve safety. All of these programmes require the best information

possible for developing safety interventions and then evaluating their effectiveness. GAIN benefits such programmes by providing them with enhanced tools and processes for producing better safety information, and more effective methods for sharing this information.

GAIN also benefits programmes that focus on gathering specific information. Examples include flight data monitoring and flight crew reporting — programmes that generate large quantities of data. GAIN is helping to develop analytical tools and processes that can convert the data into useful information, and it also helps in developing infrastructures for sharing the analyses.

GAIN organization

The GAIN organization consists of a steering committee, four working groups, a programme office and a government support team. The steering committee sets GAIN policy, issues the GAIN action plan and guides the programme office. (See box for a list of the current industry stakeholders represented on the steering committee.)

The GAIN working groups are interdisciplinary industry-government teams that work on the action plans established by the steering committee, while the programme office, currently located in the FAA Office of System Safety, provides the coalition with technical and administrative support.

The government support team helps to reduce impediments to safety information collection and sharing. It consists of representatives from civil aviation authorities and accident investigation boards of Australia, Canada, France, Japan, New

Zealand, the United Kingdom and the United States. Multi-government bodies represented include ICAO, the European Joint Aviation Authorities (JAA), the European Commission (EC) and the Nordic Working Group (represented by Sweden).

GAIN has already held a number of world conferences to bring together aviation safety professionals and present the latest GAIN products, discuss recent developments relating to collecting, analysing and sharing of aviation safety information, and consider ideas for future GAIN activities. The next world conference will be held in Europe in mid-2003. In addition, the Japan Civil Aviation Bureau and Japanese Association of

GAIN Steering Committee Members

Airbus
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Air Transport Association of America (ATA)
American Airlines
The Boeing Company
British Airways
Flight Safety Foundation (FSF)
Helicopter Association International (HAI)
International Air Transport Association (IATA)
International Association of Machinists (IAM)
Japan Airlines
JetBlue Airways
Middle East Airlines
National Business Aviation Association (NBAA)
National Air Traffic Controllers Association (NATCA)
Regional Airline Association (RAA)
U.S. Defense Dept.
U.S. Federal Aviation Administration (ex officio member)

Air Transport Engineering and Research will host a GAIN Asia-Pacific regional conference in Tokyo this November.

GAIN products

At a conference in Miami in December 2001, GAIN presented a number of products which had been produced by its working groups and the government support team. These products, and those planned for the coming year, are described below.

Aviation operator safety practices. A guide for aircraft operators, the *Operator's Flight Safety Handbook* (OFSH) has been developed to help operators start, improve or expand their internal safety programmes. The *Cabin Safety Compendium* (CSC) gives airlines access to the best practices in cabin safety. During the past year, GAIN completed the second edition of the OFSH and released two new language versions, in Japanese and Spanish. During the next year it plans to work on a second edition of the CSC and also begin to address best practices for maintenance safety and ramp safety.

Analytical methods and tools. Based on the results of a survey on analytical methods and tools, GAIN published a report on analytical processes and requirements for airline flight safety management. It also completed a three-stage review of promising analytical tools, focusing on their relevance, maturity, value and operational readiness. In partnership with airlines, GAIN reviewed the usefulness of several of these tools. The findings were published in the *Guide to Methods and Tools for Airline Flight Safety Analysis*, which contains summaries of approximately 50 methods and tools.

In the coming year GAIN plans to expand the survey of analytical processes and requirements and to continue working with airlines to learn more about their analysis of safety information. It also intends to partner with airlines to demonstrate new techniques, such as data and text mining, and expects to prepare an updated and expanded second edition of the guide.

The application of tools for air traffic management (ATM) safety will also be addressed.

Global information sharing prototypes. GAIN has gathered requirements from airlines and has helped develop two prototype systems for exchanging airline safety event reports in near-real time using a highly secure Internet connection. Information on these sharing systems is contained in a document, *Interim Report on Near-Real Time Airline Safety Event Sharing System Prototypes*.



GAIN regularly produces publications that promote better collection, analysis and sharing of safety data, and the dissemination of best safety practices.

During the coming year GAIN is planning to conduct operational demonstrations of the prototype sharing systems with a number of airlines in order to evaluate usability and safety value. These demonstrations will also lead to the development of a standard or operating protocol for sharing airline safety event information. Other tasks will include promoting various automated aviation safety information sharing activities around the world, and facilitating development of a process for sharing safety lessons and corrective actions focusing on flight operations.

Flight operations and air traffic control (ATC) operations safety information sharing. Recently GAIN expanded its activities to include efforts to foster increased safety information exchange between flight operations organizations and ATC organizations. In the coming year it plans to document current programmes that encourage such collaboration, develop guidelines for establishing new

programmes, and promote the sharing of safety information between the flight operations and ATC communities. It will also study ways of promoting a non-punitive reporting environment to improve collaboration.

GAIN has published a document listing major current and planned government aviation safety information collection programmes, and has also produced a publication on ways to reduce legal impediments to the collection and sharing of safety information. During the

forthcoming year, more information will be added to these reports.

GAIN also plans to document the safety information provisions of government and industry safety management systems, and the experience gained with these systems. Research activities in various countries relating to safety information collection, analysis and sharing will also be identified and documented.

The GAIN action plan for 2002-03, and the products described briefly above, are available on the GAIN web site (<http://www.gainweb.org>).

Solutions to impediments

As stated above, one of the primary objectives of GAIN is to reduce the legal and organizational impediments to the collection and sharing of safety information. During 2001 GAIN identified and addressed legal activities that are major impediments to efforts to improve aviation safety through enhanced safety information collection and sharing. These legal obstacles take several forms:

- civil litigation, which raises concern that the information may increase exposure to monetary liability in civil

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More information about GAIN is available at the coalition's web site, <http://www.gainweb.org>.

The safety change process has not been well defined or advertised to employees in the air transport industry. In the past, change has occurred in response to accidents and was based on experience and intuition. In today's environment, the capability exists to collect safety data through various programmes. It is certain that more safety data programmes will evolve in the future to permit an even better understanding of flight operations safety. The safety change process at each airline will have to evolve as well. □

Safety management systems

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Companies may operate several tracking systems which are specific to individual projects, programmes or systems. A safety information system is then employed to identify system-wide hazards and system safety deficiencies, the indications of which are found in the various tracking systems. Thus, a safety information system is an integral part of the safety management system and the safety measurement programme.

Conclusion. A properly managed safety management system can lead to a positive safety culture, and in time, result in improvements in safety performance. Transport Canada is confident that the use of safety management systems by aircraft operators, airport authorities, maintenance and manufacturing organizations and air navigation service providers will improve aviation safety in Canada. By adopting a performance-oriented approach to oversee the industry, Transport Canada intends to be an active partner with the Canadian aviation industry, as the industry manages the challenging and changing environment that is its destiny.

The industry's business objectives and the regulatory imperatives point in the same direction. Safety management systems make good business sense because they result in diligent processes and the expenditure of resources that brings returns, not only in safety but in terms of operational and business efficiencies.

Safety management systems also make good regulatory sense. The components of a safety management system are easily audited, the results evaluated, and performance measured. They are the core to an effective, performance-based regulatory regime. □

Collaborative effort

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accident litigation;

- regulatory sanctions raise concern that the information may lead to enforcement proceedings by government regulatory authorities for violations of aviation safety laws and regulations;
- criminal proceedings, which generate fears that the information may be used to support criminal prosecutions that could result in fines and/or incarceration; and
- public disclosure, which raises concern that the information may be disclosed to the public, in the media or otherwise, and used out of context, to the disadvantage of the informant.

In general, reporters of safety information may be reluctant to disclose anything other than what is absolutely required out of concern that the information might be used against them, their organization or airline. To gain an understanding of the legal environment for reporters of safety information, each of the countries represented on the GAIN government support team was surveyed about how these legal activities relate to the collection and sharing of incident as opposed to accident information, and how such legal impediments can be resolved. The detailed responses can be found in the GAIN report, *Reducing Legal Impediments to Collecting and Sharing Safety Information*.

Some countries have already established laws, regulations and programmes that help reduce the likelihood that information will be used against the reporter, and this encourages the collection and open exchange of vital safety information.

During the coming year, the GAIN government support team will also examine major organizational impediments to enhanced safety information collection and sharing. As a first step, GAIN is reviewing safety management systems that are currently being used by various government and industry organizations, and will identify those provisions that will facilitate enhanced safety information collection, analysis and sharing.

Summary. GAIN is helping to develop tools and processes to convert data into useful safety information and is promoting the establishment of networks for the sharing and proactive use of the information by aviation users worldwide to improve safety. It is necessary for all elements of the aviation community — airlines, manufacturers, pilots, mechanics, flight attendants, dispatchers, regulatory authorities, the military, academia, suppliers, insurance industry, and others — to work together in this endeavour. The opportunity now exists to establish an international network to collect, analyse and share information to improve worldwide aviation safety, and GAIN is helping this to become a reality. □

Accident report

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Aviation Administration (FAA) to phase in full use of GPS for all phases of flight in Canada. The *Safety of Air Taxi Operations Final Report* recommends that Transport Canada continue to publish articles ... about the safe, proper use of GPS and the hazards associated with its misuse.

Safety action required. *Low visibility and low ceiling approaches.* The need for additional regulatory restrictions for instrument approaches in poor weather has been discussed in Canada for several years because of the number of accidents that occur during the approach and landing phase. From January 1994 to December 2001, the Board has investigated 24 such accidents where low visibilities or ceilings likely contributed to the accident. ... These accidents resulted in 34 fatalities and 28 serious injuries, not counting the loss of property and damage to the environment. In September 1999, Transport Canada initiated action to implement new approach ban regulations based on visibility. These regulations should reduce the